CLAIMS:

1. A method for k-space data acquisition for magnetic resonance imaging (MRI) characterized by using of at least first and second k-spaces for interleaved data acquisition, the at least first and second k-spaces covering substantially the same physical region.

2. The method of claim 1, the k-spaces having a first coordinate axis and a second coordinate axis, the method comprising:

a) sampling into a first direction along the first coordinate axis,

b) applying a first compensation pulse,

c) sampling into a second direction along the first coordinate axis, the second direction being opposite to the first direction,

d) applying a second compensation pulse,

e) repetitively carrying out the steps a) to d).

3. The method of claims 1 or 2, the first and second compensation pulses being z-shimming pulses.

4. The method of claims 1, 2 or 3, further comprising incrementing a sampling position on the second coordinate axis after each step a) and / or after each step b).

5. The method of anyone of the preceding claims 1 to 4, further comprising performing a partial k-space data acquisition by means of the sampling in steps a) and c).

6. The method of anyone of the preceding claims 1 to 5 further comprising combining the sampled data of steps a) and c) to generate an image.

7. The method of anyone of the preceding claims 1 to 6 further comprising generating a first image based on the data samples being acquired in the first direction, generating a second image based on the data samples acquired in the second direction and combining the first and second images into one image.

8. The method of anyone of the proceeding claims 1 to 7, whereby a number of n k-spaces is used for the interleaved data acquisition, and further comprising the steps of:
- applying a number of n-1 first compensation pulses of a first amplitude,
- applying the second compensation pulse with a second amplitude, where the second amplitude is n-1 times the first amplitude.

9. A magnetic resonance imaging (MRI) device comprising means for interleaved k-space data acquisition in at least first and second k-spaces.

10. The magnetic resonance imaging device of claim 9 comprising:
- means (2, 3, 4, 5, 6, 9, 10) for k-space data acquisition, the k-spaces having a first coordinate axis and a second coordinate axis,
- a control unit (11) for generating of control signals for the means for k-space data acquisition,

wherein the control signals cause the means for k-space data acquisition to
a) sample into a first direction along the first coordinate axis,
b) apply a first compensation pulse,
c) sample into a second direction along the first coordinate axis, the second direction being opposite of the first direction,
d) apply a second compensation pulse,
e) repetitively carry out the steps a) to d).

11. A computer program product for k-space data acquisition for magnetic resonance imaging (MRI), the computer program product comprising program means to perform k-space data acquisition in at least first and second k-spaces in an interleaved way.

12. The computer program products of claim 11, the k-spaces having a first coordinate access, the program means being adapted to perform the steps of :
a) sampling into a first direction along the first coordinate axis,
b) applying a first compensation pulse,
c) sampling into a second direction along the first coordinate axis, the second direction being opposite to the first direction,
d) applying a second compensation pulse,

e) repetitively carrying out the steps a) to d).